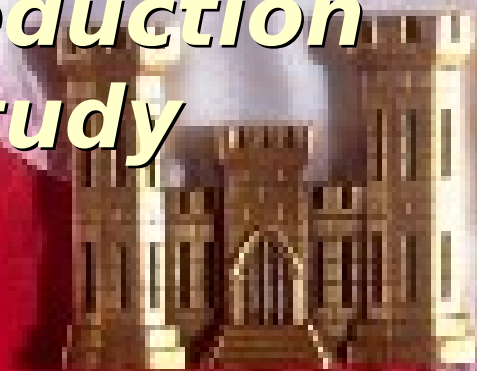


***Presentation  
to the***

***Public Open House***

***Des Moines and Raccoon Rivers  
Flood Damage Reduction  
Feasibility Study***



***Army Corps of Engineers Rock Island District***

***May 24, 2005***



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## Summary of Recommended Plan

- Improvements to Birdland Park & Central Place Levees
- Improvements to 19 Closures in the Downtown Levees
- Recreational Trail Connecting Riverview and McHenry Parks to the Neal Smith Trail at Birdland Park



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## Phase 1 Investigations

### Hydrology and Hydraulic Models

- Des Moines River
- Raccoon River
- Walnut Creek
- Fourmile Creek
- Leetown Creekway

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## Phase 1 Investigations Results

- Flood Discharges
- Updated Flood Profiles
- Detailed Flood Maps

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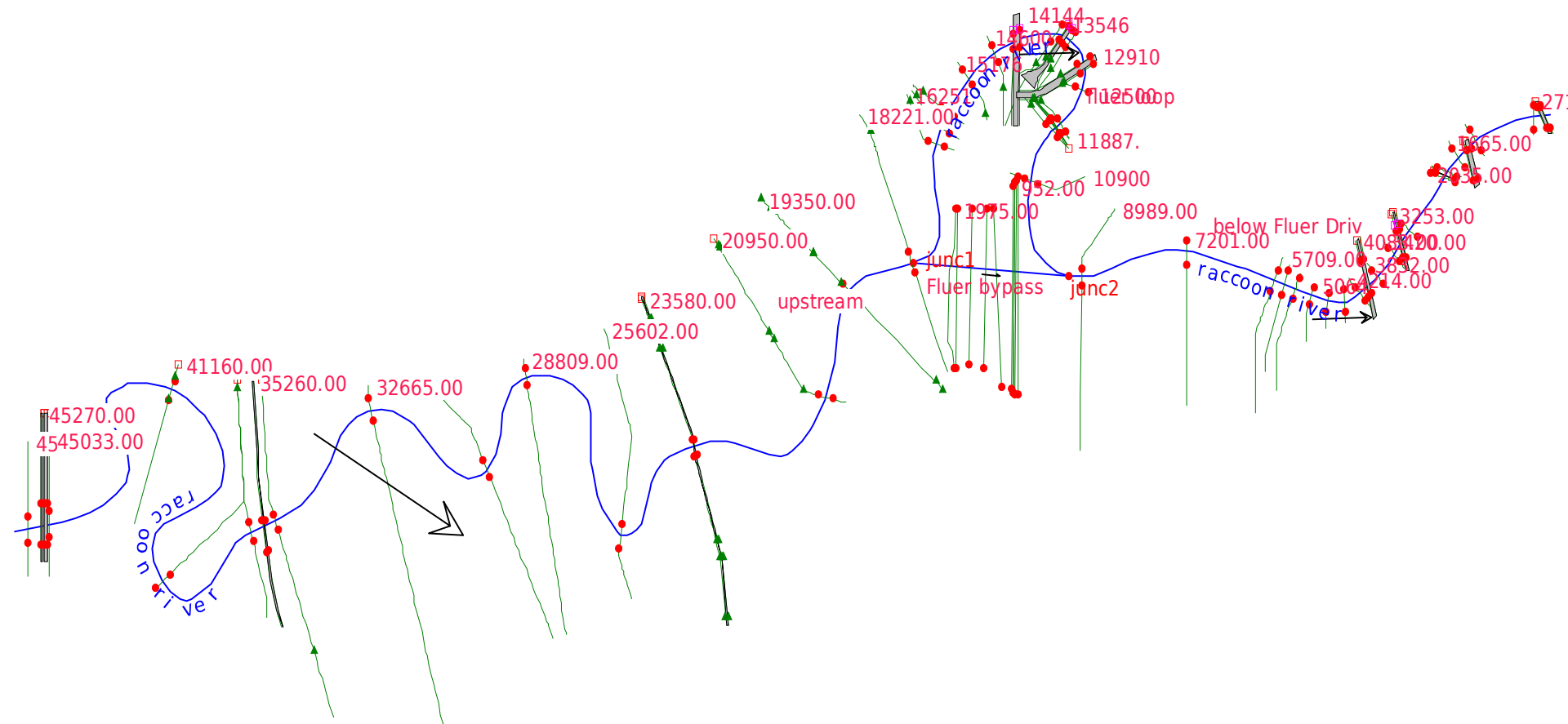
# Des Moines Watershed



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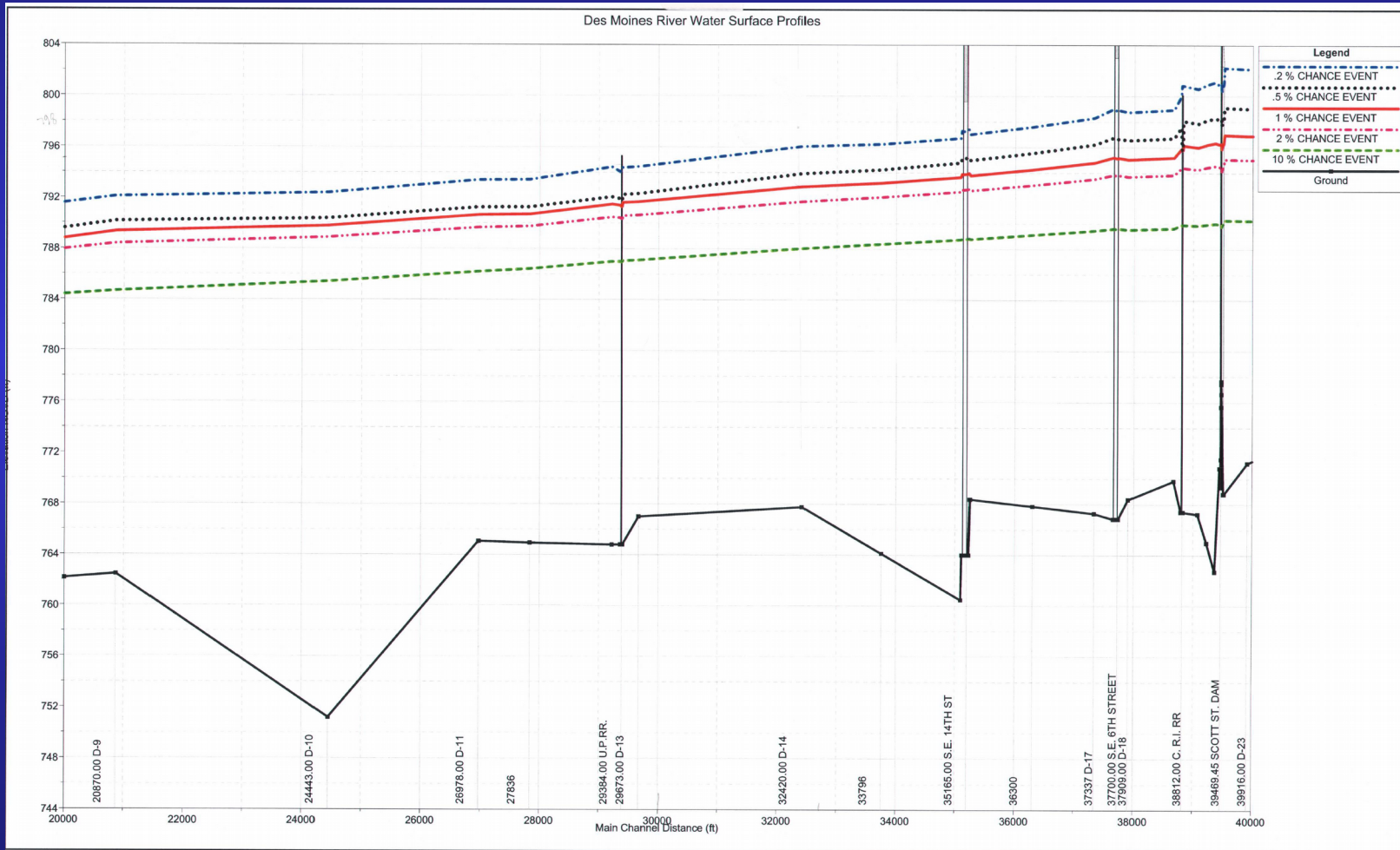
# Raccoon River Cross Section Locations for Model





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# Flood Profiles Example



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## Flood Discharge Summary

Cubic Feet Per Second

River/Stream	1988 FIS 100-year	New 100-year	New 500-year	Peak 1993 Flood
Des Moines River, NW 2 <sup>nd</sup> Avenue	33,000	37,000	52,000	55,000
Des Moines River, SE 14 <sup>th</sup> Avenue	63,900	87,000	132,000	116,000
Raccoon River	46,300	61,300	85,900	71,000
Walnut Creek	17,000	17,000	24,300	6,460
Foumle Creek	6,140	8,290	10,700	4,200
Leetown Creekway	1,304	1,585	1,880	-

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## Phase 2 Evaluation

- Detailed Evaluation of 11 Reaches
- Combined Results into 1 Recommended Plan



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## Measures Eliminated

- Reservoirs
- Channel Modification & By-Pass Channels
- Non-Structural Measures
- Ecosystem Restoration

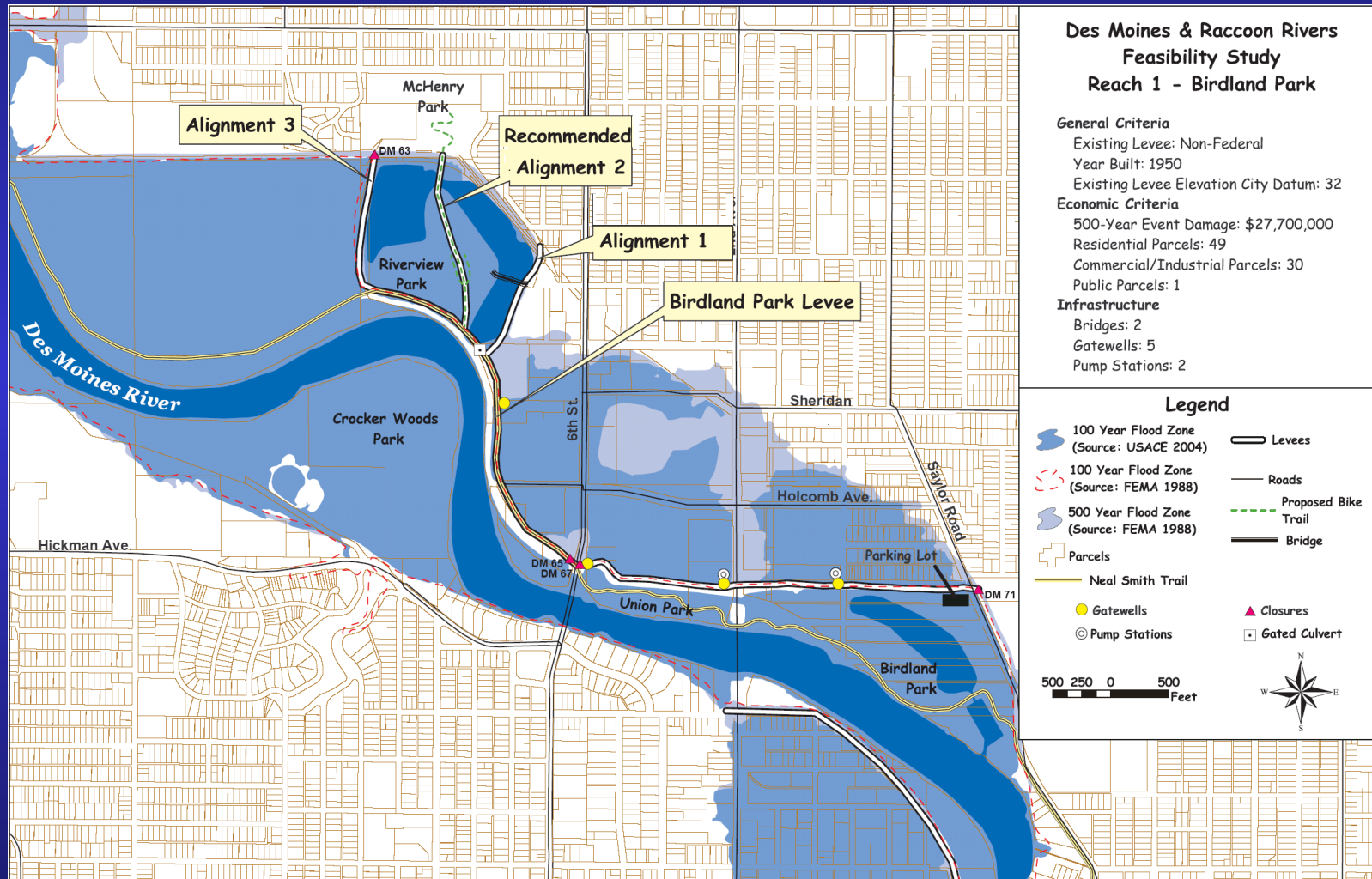
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# Birdland Park Reach 1



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# Birdland Park Levee with Trail



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# Birdland Park Levee Alternatives



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## Phase 2 Evaluation

- Birdland Park Levee (Reach 1)

<b><u>Birdland Park</u></b>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
<b><u>Alignment 2</u></b>			
100 year	3,618,000	1.01	3,000
250 year	4,048,000	1.12	32,000
500 year	4,984,000	1.29	97,000
Recreation Trail	242,000	7.1	100,000



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# Central Place Levee Reach 2



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# Central Place Levee



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## Phase 2 Evaluation

- Central Place Levee (Reach 2)

<b><u>Central Place</u></b>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
<b>100 year</b>	3,156,000	3.05	448,000
<b>250 year</b>	3,420,000	3.24	528,000
<b>500 year</b>	3,839,000	3.4	632,000



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# Downtown East Reach 3



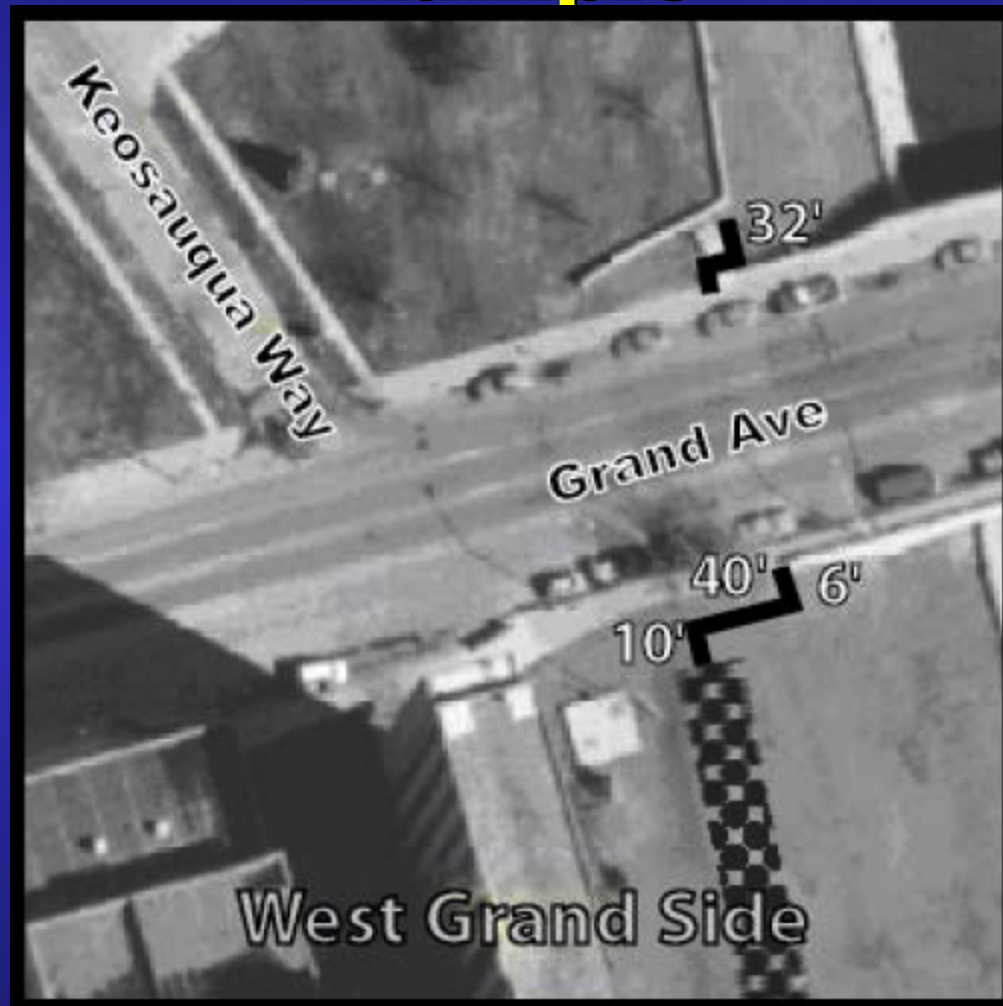
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# Downtown Closure Improvement Example



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## Phase 2 Evaluation

- Downtown East Levee (Reach 3)

<b><u>Downtown East Levee</u></b>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
Closure Improvements	642,000	3.8	115,000
500 year levee	11,440,000	0.15	-649,000



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# Downtown West Reach 4



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## Phase 2 Evaluation

- Downtown West Levee (Reach 4)

<b><u>Downtown West Levee</u></b>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
Closure Improvements	260,000	4.5	57,000
500 year levee	4,943,000	0.29	-241,000



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# Downtown South Reach 5



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## Phase 2 Evaluation

- Downtown South Levee (Reach 5)

<b><u>Downtown South Levee</u></b>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
Closure Improvements	31,000	15.3	28,000
500 year levee	6,175,000	0.07	-388,000





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## Phase 2 Evaluation

- Raccoon River 205 Levee (Reach 6)
- Des Moines Water Works Levee (Reach 7)
- West Des Moines-Des Moines Levee (Reach 8)

These existing levees are adequate and  
improvements to the levees are not  
recommended



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# Walnut Creek Reach 9



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## Phase 2 Evaluation

- Walnut Creek at Grand Avenue (Reach 9)

<u>Walnut Creek</u>	<b>Project Cost Estimate</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
100 year levee	2,481,000	0.32	-11,000



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# Fourmile Creek Reach 10



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# Fourmile Creek Watershed



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## Phase 2 Evaluation

- Fourmile Creek (Reach 10)
  - No levees are economically justified ( $BCR < 0.1$ )
  - No Corps buyouts are economically justified ( $BCR < 0.5$ )
  - Continued buyouts by City are recommended



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# Leetown Creekway Reach 11



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## Recommended Plan

- Reconstruct 7,700 feet of levee at Birdland Park to 500-year level
- Construct bike trail on Birdland Park levee to McHenry & Riverview Parks
- Reconstruct 5,900 feet of levee at Central Place to 500-year level
- Improve 19 closure structures in existing Downtown levees (Reaches 3, 4, & 5)
- Estimated cost \$10 million, Benefit Cost Ratio 2.5

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## Recommended Plan

- Environmental Mitigation:
  - Chichaqua Mitigation site would have a max. 12 acres
  - Central Place Mitigation river side of the levee 4.4 acres



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## Summary of the Recommended Plan

	<b>Project Cost Estimates</b>	<b>Benefit Cost Ratio</b>	<b>Net Annual Benefits</b>
Birdland Park 500-year Levee	4,984,000	1.3	97,000
Birdland Park Recreation Trail	242,000	7.1	100,000
Central Place 500-year Levee	3,839,000	3.4	632,000
Downtown East Closure Improvements	642,000	3.8	115,000
Downtown West Closure Improvements	260,000	4.5	57,000
Downtown South Closure Improvements	31,000	15.3	28,000
	<b>9,998,000</b>	<b>2.5</b>	<b>1,029,000</b>

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## Recommended Plan

Total Project Cost Estimate	\$ 9,998,000
Federal Cost Share (65%)	\$ 6,462,000
Non-Federal Cost Share (35%)	\$ 3,536,000
<i>Lands, Damages, Relocations</i>	<i>\$ 963,000</i>
<i>Cash Contribution</i>	<i>\$ 2,573,000</i>

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## Schedule to Complete Project

Action Item	Estimated Completion Date
Chief of Engineer's Report	Dec-05
Congressional Authorization and Appropriations	Sep-06
Complete Plans & Specifications	Jun-08
Real Estate Acquisition	Aug-08
Start Construction Contract	Nov-08
Complete Construction	Nov-10

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## Primary Project Benefits

- Improved Flood Protection for Birdland Park and Central Place Neighborhoods
- Improved Recreation Trail
- Improved Flood Protection for Downtown Des Moines



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# The City of Des Moines and the U.S. Army Corps of Engineers

Welcome your

Questions and Comments

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